

Filed Electronically on September 27, 2007

PATENT
Dkt. STL10005

In re application of: **Christopher L. Hill and Garry E. Korbel**
Assignee: **Seagate Technology LLC**
Application No.: **09/995,206** Group No.: **2837**
Filed: **November 27, 2001** Examiner: **E. Glass**
For: **POWER SUPPLY OUTPUT CONTROL APPARATUS AND METHOD**

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P. O. Box 1450
Alexandria, Virginia 22313-1450

ATTENTION: Board of Patent Appeals and Interferences

Sir:

APPELLANT'S BRIEF

This APPELLANT'S BRIEF is filed responsive to the Notice of Appeal filed July 27, 2007 and the Advisory Action mailed July 3, 2007. The required fees, any required petition for extension of time for filing this Brief, and the authority and time limits established by the Notice of Appeal are dealt with in the accompanying TRANSMITTAL OF APPEAL BRIEF.

This brief contains these items under the following headings, and in the order set forth below:

- I. REAL PARTY IN INTEREST
- II. RELATED APPEALS AND INTERFERENCES
- III. STATUS OF CLAIMS
- IV. STATUS OF AMENDMENTS
- V. SUMMARY OF CLAIMED SUBJECT MATTER
- VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL
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- IX. EVIDENCE APPENDIX
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I. REAL PARTY IN INTEREST

The real party in interest in this Appeal is Seagate Technology LLC.

II. RELATED APPEALS AND INTERFERENCES

There are no other appeals or interferences that will directly affect, or be directly affected by, or have a bearing on the Board's decision in this Appeal.

III. STATUS OF CLAIMS

The status of the claims in this application is:

| <u>Claim</u> | <u>Status</u> |
|----------------------------|------------------------|
| 34. (Previously presented) | Independent. |
| 35. (Previously presented) | Depends from claim 34. |
| 36. (Previously presented) | Depends from claim 34. |
| 37. (Previously presented) | Depends from claim 34. |
| 38. (Previously presented) | Depends from claim 34. |
| 39. (Previously presented) | Depends from claim 34. |
| 40. (Previously presented) | Depends from claim 34. |
| 41. (Previously presented) | Independent. |
| 42. (Previously presented) | Depends from claim 41. |
| 43. (Previously presented) | Depends from claim 41. |
| 44. (Previously presented) | Depends from claim 43. |
| 45. (Previously presented) | Depends from claim 41. |
| 46. (Previously presented) | Depends from claim 45. |

| | |
|----------------------------|------------------------|
| 47. (Previously presented) | Independent. |
| 48. (Previously presented) | Depends from claim 47. |
| 49. (Cancelled) | |
| 50. (Cancelled) | |
| 51. (Previously presented) | Depends from claim 47. |
| 52. (Previously presented) | Depends from claim 47. |
| 53. (Previously presented) | Depends from claim 52. |
| 54. (Previously presented) | Depends from claim 35. |
| 55. (Previously presented) | Depends from claim 41. |
| 56. (Previously presented) | Depends from claim 47. |

A. TOTAL NUMBER OF CLAIMS IN APPLICATION

Claims in the application: 34-48 and 51-56.

B. STATUS OF ALL THE CLAIMS

1. Claims canceled: 1-33 and 49-50.
2. Claims withdrawn from consideration but not canceled: None
3. Claims pending: 34-48 and 51-56.
4. Claims allowed: None.
5. Claims rejected: 34-48 and 51-56.
6. Claims objected to: None

C. CLAIMS ON APPEAL

Claims now on appeal: 34-48 and 51-56.

IV. STATUS OF AMENDMENTS

No post-final amendments have been submitted.

V. SUMMARY OF CLAIMED SUBJECT MATTER

The embodiments of the present invention as recited by the language of independent claims 34, 41 and 47 are generally directed to a method and apparatus for power supply output control.

Independent claim 34 generally features an apparatus (such as exemplary disk drive 100, 200 in FIGS. 1-2; specification, page 4, lines 6-7; page 5, lines 22-25) comprising a circuit (such as exemplary motor control circuitry 232 in FIGS. 2 and 3; exemplary current control circuit 300 of FIG. 3; page 6, lines 4-9) that monitors (such as by step 504, FIG. 5; page 8, lines 16-17; page 9, line 28 to page 10, line 1; page 10, lines 15-17) a cumulative amount of charge (such as step 506, FIG. 5; page 8, lines 18-19; page 10, lines 23-25; page 11, lines 20-21) associated with a power supply (such as exemplary power supply 302 in FIG. 3; page 11, lines 3-7; page 6, lines 9-13 [amended paragraph]), wherein power is removed (such as by step 510, FIG. 5; spindle motor drivers 320, FIG. 3; page 11, lines 7-10 and lines 15-17) from a load (such as exemplary spindle motor 206, 304 in FIGS. 2-3; page 9, lines 1-8) when the cumulative amount of charge is at least equal (such as by step 508, FIG. 5; exemplary voltage comparator 218 and DAC 310, FIG. 3; page 8, lines 26-28) to a predetermined value (such as exemplary reference voltage V_{ref} , step 508 of FIG. 5; page 8, lines 22-25) from a profile (such as exemplary profile 400, FIG. 4; page 7, lines 16-26; page 9, lines 9-12 and 17-20) of said values that decrease in magnitude (such as exemplified by decreasing magnitude of values in profile 400, FIG. 4; page 11, lines 17-19; page 11, line 26 to page 12, line 1) during application of power (such as step 502, FIG. 5; page 11, lines 20-23) to said load.

Independent claim 41 generally features a system (such as exemplary disk drive 100, 200 in FIGS. 1-2; specification, page 4, lines 6-7; page 5, lines 22-25) comprising a motor (such as exemplary spindle motor 206, 304 in FIGS. 2-3; page 9, lines 1-8) coupleable to a power supply (such as exemplary power supply 302 in FIG. 3; page 11, lines 3-7; page 6, lines 9-13 [amended paragraph]); a sensor (such as exemplary sense resistor 306 in FIG. 3;

page 6, lines 13-15 [amended paragraph]) coupleable to the motor; and a control circuit (such as exemplary motor control circuitry 232 in FIGS. 2 and 3; exemplary current control circuit 300 of FIG. 3; page 6, lines 4-9) including an input (such as non-numerically designated signal paths across sense resistor 306 that extend to gain multiplier 308 in FIG. 3) and an output (such as non-numerically designated signal path that extends from spindle driver control logic 322 to motor drivers 320 in FIG. 3), the input being coupleable to the sensor (see FIG. 3), wherein the control circuit provides an output signal (page 7, lines 11-13 [amended paragraph]) on the output responsive to an amount of charge (such as step 506, FIG. 5; page 8, lines 18-19; page 10, lines 23-25; page 11, lines 20-21) provided from the power supply that is at least equal (such as by step 508, FIG. 5; exemplary voltage comparator 218 and DAC 310, FIG. 3; page 8, lines 26-28) to a predetermined threshold (such as exemplary reference voltage V_{ref} , step 508 of FIG. 5; page 8, lines 22-25), the predetermined threshold selected from a profile (such as exemplary profile 400, FIG. 4; page 7, lines 16-26; page 9, lines 9-12 and 17-20) of said thresholds that decrease in magnitude (such as exemplified by decreasing magnitude of values in profile 400, FIG. 4; page 11, lines 17-19; page 11, line 26 to page 12, line 1) during application of power (such as step 502, FIG. 5; page 11, lines 20-23) to said motor.

Independent claim 47 is generally directed to a method (such as routine 500 in FIG. 5) comprising steps of:

monitoring (such as by step 504, FIG. 5; page 8, lines 16-17; page 9, line 28 to page 10, line 1; page 10, lines 15-17) a charge amount (such as step 506, FIG. 5; page 8, lines 18-19; page 10, lines 23-25; page 11, lines 20-21) being removed from a power supply (such as

exemplary power supply 302 in FIG. 3; page 11, lines 3-7; page 6, lines 9-13 [amended paragraph]); and

decoupling (such as by step 510, FIG. 5; spindle motor drivers 320, FIG. 3; page 11, lines 7-10 and lines 15-17) the power supply from a load (such as exemplary spindle motor 206, 304 in FIGS. 2-3; page 9, lines 1-8) responsive to the charge amount being at least equal (such as by step 508, FIG. 5; exemplary voltage comparator 218 and DAC 310, FIG. 3; page 8, lines 26-28) to a predetermined level (such as exemplary reference voltage V_{ref} , step 508 of FIG. 5; page 8, lines 22-25) selected from a profile (such as exemplary profile 400, FIG. 4; page 7, lines 16-26; page 9, lines 9-12 and 17-20) of said levels that decrease in magnitude such as exemplified by decreasing magnitude of values in profile 400, FIG. 4; page 11, lines 17-19; page 11, line 26 to page 12, line 1) during application of power (such as step 502, FIG. 5; page 11, lines 20-23) to said load.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

The grounds for rejection presented for review on appeal is the final rejection of all pending claims 34-48 and 51-56 under 35 U.S.C. §103(a) as being obvious over U.S. Patent No. 4,967,291 to Touchton (“Touchton ‘291”) in view of U.S. Patent No. 6,043,631 to Tsenter (“Tsenter ‘631”).

VII. ARGUMENT

REJECTION OF CLAIMS 34-48 AND 51-56

Independent claim 34 is a representative claim that generally features an apparatus comprising “a circuit that monitors a cumulative amount of charge associated with a power supply, wherein power is removed from a load when the cumulative amount of charge is at least equal to a predetermined value from a profile of said values that decrease in magnitude during application of power to said load.”

The Applicant respectfully submits that the Examiner has failed to establish a *prima facie* case of obviousness of the claimed subject matter on the basis that the cited references fail to teach or suggest all of the claim limitations.

The Applicant further respectfully submits that the Examiner has failed to establish a *prima facie* case of obviousness of the claimed subject matter on the basis that, when the cited references are considered as a whole, the skilled artisan would not find it desirable to combine or modify the references to arrive at the claimed combination, nor would have had a reasonable expectation of success in doing so. Each of these points will be discussed below.

THE CITED REFERENCES FAIL TO TEACH OR SUGGEST ALL THE LIMITATIONS RECITED BY INDEPENDENT CLAIM 34

An obviousness rejection requires a showing that all the claim limitations are taught or suggested by the cited references. See *In re Royka*, 180 USPQ 580 (CCPA 1974); MPEP 2143. In the present case, neither Touchton ‘291 or Tsenter ‘631 teach or suggest that “power is removed from a load when the cumulative amount of charge is at least equal to a

predetermined value from a profile of said values that decrease in magnitude during application of power to said load,” as featured by claim 34.

The Examiner correctly found that Touchton ‘291 is deficient with regard to teaching or suggesting this claim language, but incorrectly maintained that this language is taught by Tsenter ‘631. Specifically, the Examiner stated:

“Tsenter teaches when a profile (fig. 2) of values that decrease in magnitude during application of power to the load. It would have been obvious to one having ordinary skill in the art at the time of the invention to implement a monitoring of charge of in the power source for recognition of potential adverse conditions (abstract) as taught by Tsenter.” Final Office Action, page 3, lines 17-21 (emphasis added)

In the “Response to Arguments” Section of the Final Office Action, the Examiner further elaborated this view, stating:

The applicant argues that the rejection is deficient in showing “power is removed from a load when the cumulative amount of charge is at least equal to a predetermined value from a profile of said values that decrease in magnitude during application of power.” FIG. 2 of Tsenter fulfills the claim language [by] decreasing in magnitude and being a profile. Final Office Action, page 5, line 21 to page 6, line 3 (emphasis added)

This is respectfully traversed.

As previously discussed by the Applicant (See Applicant’s Response filed November 14, 2006, page 7, line 16 to page 8, line 9; Applicant’s Response filed June 1, 2007, page 7, line 22 to page 8, line 10), Tsenter ‘631 teaches a battery recharger 9 used to recharge a battery 30. See FIG. 1. The battery recharger 9 periodically interrupts the application of charge to the battery 30 so that voltage measurements can be made to assess the charge state of the battery. See e.g., Tsenter ‘631, col. 4, lines 23-25.

Tsenter '631 preferably uses cyclical timing intervals of selected duration for both the charge pulses and the rest periods. One exemplary timing interval taught by Tsenter '631, and illustrated by FIG. 2, uses charge pulses of about 20 seconds in duration, and rest periods of about 280 milliseconds in duration. See col. 9, lines 33-39 (*"In FIG. 2, the rechargeable nickel battery is initially charged at a current near the capacity of the battery...This charge is provided with a pulse duration which equals approximately 20 s and is filtered by a currentless period of about 280 ms."*).

FIG. 2 of Tsenter '631 generally illustrates two of these 20 second charging pulses during which charge is supplied to the battery 30. These successive charging pulses are the two substantially horizontal portions in FIG. 2 with charging voltage V_1 and V_2 , respectively. See FIG. 2 and col. 8, lines 57-67.

FIG. 2 of Tsenter '631 further shows two of the aforementioned "currentless periods," or "rest periods," of about 280 milliseconds in duration during which no charging current is applied to the battery 30. These two rest periods immediately follow the first and second current charging pulses, and are characterized as decreasing portions during which the output voltage of the battery 30 decays in relation to the charge level of the battery. See col. 9, lines 10-19.

As further shown in FIG. 2, Tsenter '631 teaches to take voltage measurements at specific times during the decaying rest periods of FIG. 2. A first voltage measurement E_i is taken near the beginning of the rest period, and a second voltage measurement E_e is taken near the end of the rest period. See col. 9, lines 39-42 (*" E_i is sampled after 2 ms from the beginning of the rest period and E_e is sampled in the end of the rest period (near 280 ms)."*).

A chemical polarization voltage V_{CP} is determined in relation to a difference between the E_i and E_e values, and the slope of V_{CP} (dV_{CP}/dt) is monitored over time to regulate the charging process. See col. 5, lines 23-30; col. 8, line 66 to col. 9, line 23.

In view of the foregoing, the Applicant respectfully submits that the Examiner's reasoning that "*FIG. 2 of Tsenter fulfills the claim language [by] decreasing in magnitude and being a profile*" is without merit. FIG. 2 of Tsenter '631 does not teach a profile at all, and instead represents the decay in output voltage of the battery 30 between charge pulses.

Merely asserting that the claim language is met because FIG. 2 graphically shows a decreasing portion, as the Examiner has done here, is insufficient to establish a *prima facie* case of obviousness. Reconsideration and allowance of independent claims 34, 41 and 47, and for the claims depending therefrom, are respectfully requested on this basis.

THE EXAMINER FAILED TO APPRECIATE WHY THE APPLICANT EVALUATED
THE TEACHINGS AND SUGGESTIONS OF TSENTER '631 IN AN
OBVIOUSNESS CONTEXT

In the Advisory Action, the Examiner sustained the final rejection of the claims, stating:

"The applicant is attacking the Tsenter reference as if it was a 102 reference or solely on its own. Tsenter is used in combination with Touchton because Touchton does not speak specifically of a profile that decreases in magnitude, which Tsenter teaches. The 103 rejection is made with the combination of Touchton and Tsenter." Advisory Action, page 2, lines 1-4 (emphasis added)

As pointed out previously by the Applicant, in order for the Examiner to establish a *prima facie* case of obviousness, he must demonstrate that all of the claim limitations are actually taught or suggested by the cited references. *Royka, Supra*; MPEP 2143.

The Examiner admitted that Touchton ‘291 failed to teach or suggest the recited “profile” as claimed, but asserted that Tsenter ‘631 does teach or suggest the recited “profile” as claimed. Under these circumstances, it was entirely appropriate for the Applicant to evaluate the teachings and suggestions of Tsenter ‘631 in the manner set forth by the record.

The Applicant was not “*attacking the Tsenter reference as if it was a 102 reference*,” as suggested by the Examiner, but rather, the Applicant was pointing out deficiencies in the teachings and suggestions of Tsenter ‘631. The Applicant fails to see how referring to Touchton ‘291 would have aided in the analysis of Tsenter ‘631, particularly when the Examiner already admitted that Touchton ‘291 was deficient with regard to the “profile” claim language.

All claim limitations are material and must be accounted for when making an obviousness determination. *Lemelson v. U.S.*, 224 USPQ 526 (Fed. Cir. 1985); *In re Wilson*, 165 USPQ 494 (CCPA 1970). Since the cited references fail to teach or suggest all of the limitations of claim 34, a *prima facie* case of obviousness has not been established.

THE SKILLED ARTISAN WOULD NOT HAVE FOUND IT DESIRABLE TO
COMBINE THE CITED REFERENCES TO ARRIVE AT THE CLAIMED
SUBJECT MATTER

The Applicant further respectfully submits that the skilled artisan would not have found it desirable to combine the cited Touchton ‘291 and Tsenter ‘631 references to arrive at the claimed combination.

As the Board will appreciate, an obviousness rejection is evaluated by the Office in view of *Graham v. John Deere Co.*, 383 US 1 (1966). Such analysis requires: (A) the

elaimed invention must be considered as a whole; (B) the referenees must be considered as a whole and must suggest the desirability and thus the obviousness of making the combination; (C) the referenees must be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention; and (D) reasonable expectation of sueeess is the standard with which obviousness is determined. See MPEP 2141.

When considering the subject matter of claim 34 as a whole (per *Graham*), the skilled artisan would understand that the claim language “*power is rcmoved from a load when the cumulative amount of charge is at least equal to a predetermined value from a profile of said valucs that decrease in magnitude during application of power to said load*” generally operates to remove power from the recited “*load*” when the recited “*cumulative amount of charge*” is “*at least equal to*” (e.g., equal to or greater than), a value from a “*profile of said values*” that “*deccrase in magnitude.*” Advantages of this elaimed subject matter are discussed in the speeification including at page 9, lines 13-23 with regard to the illustrated environment of the exemplary disk drive 100, 200 to provide better load response and power supply eharacteristics.

The Examiner posited that the ordinary skilled artisan would have been motivated to adapt the system of Touchton ‘291 to incorporate the “*monitoring of charge [] in the power source for recognition of potential adverse conditions (abstract) as taught by Tsentr.*” Final Office Action, page 3, lines 17-20. This is respectfully traversed.

When considering each of the eited Touchton ‘291 and Tsentr ‘631 referenees as a whole (per *Graham*), the skilled artisan would first note that Touehton ‘291 teaches a disk drive 10 with an actuator 12 that supports a number of heads 14 adjacent recordable storage disks 16, and a voice coil motor (VCM) 18 that rotates the actuator 12, and hence the heads

14, across the disk surfaces during operation. Touchton '291, col. 2, line 56 to col. 3, line 12; FIGS. 1-2.

The skilled artisan would further understand Touchton '291 as teaching a circuit that limits the velocity of the heads 14 during movement across the disk surfaces to a maximum safe-velocity. This circuit is illustrated in FIG. 3, and operates to prevent damage to the disk drive 10 as a result of an over-velocity error condition. See col. 5, lines 54-58; col. 5, line 64 to col. 6, line 5 (*"This constitutes an electronic limitation on the maximum velocity of head actuator 12 by cutting off further acceleration beyond the threshold velocity..."*).

When an integrated VCM current value in Touchton '291 reaches the predetermined threshold, Touchton '291 teaches to turn off transistors Q1-Q4 so that applied current flow through coil 18 is temporarily ceased. Col. 7, line 56 to col. 8, line 4. In this way, the Touchton '291 circuit operates as an upper velocity limit (*"Consequently, no further acceleration will be imparted by coil 18 to head actuator 12, and so the velocity of head actuator 12 will never rise above the predetermined threshold velocity."* Col. 8, lines 4-7, emphasis added).

The predetermined threshold velocity is a maximum safe velocity at which the actuator 12 travels during a seek operation. The skilled artisan would understand that generally, higher seek velocities would generally be advantageous in that higher data throughput rates could be attained as less time would be spent waiting to position the head 14 to carry out an I/O operation. See e.g., Touchton, col. 1, lines 22-32.

At the same time, the attained velocity must not be so high as to risk damage to the drive 10, should the drive control circuitry not be able to stop the actuator 12 before it crashes into a limit stop. Col. 1, lines 49-54; col. 4, lines 46-53. The circuitry of Touchton

‘291 thus operates as a governor, causing the VCM 18 to “cutout” as required to limit the maximum attainable speed of the actuator 12.

The skilled artisan would not find it desirable to attempt to modify Touchton ‘291 in view of Tsenter ‘631 as suggested by the Examiner to reduce this maximum safe velocity in accordance with a “*profile of said values that decrease in magnitude during application of power to said load*” as claimed. While the Applicant respectfully maintains that there is nothing in Tsenter ‘631 that even resembles a “profile” as claimed, assuming arguendo that it does, the skilled artisan would not view it desirable to change the maximum velocity during the operation of the disk drive 10 as suggested by the Examiner.

Rather, it is clear that Touchton ‘291 computes the maximum velocity based on the physical characteristics of the drive 10, including the ability of the crash stop to safely dissipate the energy from a runaway actuator impact. See e.g., col. 4, line 54 to col. 5, line 58. The highest safe maximum velocity is thereafter used. The skilled artisan would not view it as being desirable to derate this maximum velocity in accordance with a “*profile of said values that decrease in magnitude during application of power to said load*” as claimed, as this would provide lower maximum allowable velocities and decrease data I/O rates for no apparent benefit.

Since the skilled artisan would not find it desirable to modify the cited references to arrive at the claimed subject matter, the rejection is based on an improper hindsight reconstruction of the claim language using the claims as a blueprint to pick and choose elements from the cited references in a (failed) attempt to cob together the claimed combination. *Graham, Supra*. No *prima facie* case of obviousness has accordingly been

established, and reconsideration and allowance of the claims are respectfully requested on this basis as well.

THE EXAMINER'S STATED RATIONALE FOR THE COMBINATION IS MERELY
CONCLUSORY AND FAILS TO INCORPORATE THE REQUISITE "ARTICULATED
REASONING AND RATIONAL UNDERPINNING"

As noted above, *Graham* requires a showing of a reasonable expectation of success on the part of the skilled artisan in making the claimed combination. MPEP 2141. Moreover, mere conclusory statements by the Examiner with regard to the obviousness of the combination are insufficient; rather, there must be "*some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.*" *In re Kahn*, 441 F.3d 997, 988 (Fed. Cir. 2006); *KSR v. Teleflex*, 127 S.Ct. 1727 (2007).

As noted above, the Examiner justified the combination of references on the basis that "*monitoring of charge [] in the power source for recognition of potential adverse conditions (abstract) as taught by Tsenter*" would have been desirable in Touchton '291. This is again respectfully traversed.

When considering the cited references as a whole (per *Graham*), it would not likely escape the notice of the skilled artisan that Tsenter '631 teaches a battery charger 9 that takes voltage measurements of a battery 30 between charge pulses; that is, at times when current is not being applied to the battery. See e.g., decaying portions in FIG. 2 of Tsenter '631.

As previously explained to the Examiner (see Applicant's 11/I/05 Response, page 9, lines 10-16), Touchton '291 uses integrator 72 to integrate the coil current to estimate coil velocity. See Touchton '291, FIG. 3. Once the VCM control transistors Q1-Q4 are turned

off, further integrated values are “blind” and cannot be relied upon to indicate the actual coil velocity. See e.g., lines 49-59.

The Examiner thus posits that it would be fully expected that the skilled artisan could readily incorporate the voltage measurements in Tsenter ‘631 into the system of Touchton ‘291, and would want to do so in order to monitor the performance of the power supply feeding the VCM 18. This is without merit. Touchton ‘291 obtains the velocity measurements while the load (VCM 18) is ON and current is flowing through sense resistors 36, 44; Tsenter ‘631, on the other hand, measures the open circuit voltage decay after the load (battery 30) has already been turned OFF. Touchton ‘291 cannot obtain sensed voltages when the load is off, and Tsenter ‘631 cannot sense the charge state of the battery 30 when the load is on.

It is therefore clear that the rejection is based on mere conclusory statements by the Examiner without “*articulated reasoning with some rational underpinning to support the legal conclusion.*” *Kahn, Supra*. It is also clear that the skilled artisan having common sense at the time of the invention would not have reasonably considered modifying Touchton ‘291 with the charge monitoring features of Tsenter ‘631 to arrive at the claimed combination in the manner suggested by the Examiner, nor would have such artisan have had any reasonable expectation of success in doing so. *Graham, Supra; KSR, Supra*.

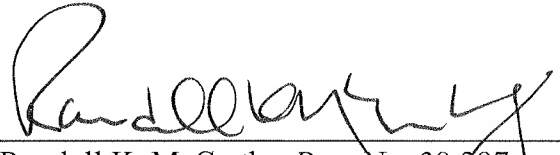
The Applicant respectfully submits that the Examiner has failed to establish a *prima facie* ease of obviousness of the claimed subject matter for these reasons as well.

Conclusion

In view of the foregoing discussion, it is respectfully submitted that all pending claims 34-48 and 51-56 are patentable over the cited references. The Applicant respectfully prays the Board reconsider and direct passage to allowance of all pending claims.

Respectfully submitted,

By:

A handwritten signature in black ink, appearing to read "Randall K. McCarthy", written over a horizontal line.

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VIII. CLAIMS APPENDIX

Claims 1-33 (cancelled).

34. (Previously presented) An apparatus comprising a circuit that monitors a cumulative amount of charge associated with a power supply, wherein power is removed from a load when the cumulative amount of charge is at least equal to a predetermined value from a profile of said values that decrease in magnitude during application of power to said load.

35. (Previously presented) The apparatus of claim 34 wherein the load is a motor.

36. (Previously presented) The apparatus of claim 34 further comprising drivers that are disabled responsive to the cumulative amount of charge being at least equal to the predetermined value.

37. (Previously presented) The apparatus of claim 34 wherein the predetermined value is based on an amount of charge that will cause a spike when the amount of charge is removed from the power supply.

38. (Previously presented) The apparatus of claim 34 wherein the cumulative amount of charge is monitored with an integrative device.

39. (Previously presented) The apparatus of claim 34 wherein the load is an inductive type.

40. (Previously presented) The apparatus of claim 34 wherein the circuit minimizes a spike on the power supply.

41. (Previously presented) A system comprising:

a motor coupleable to a power supply;

a sensor coupleable to the motor; and

a control circuit including an input and an output, the input being coupleable to the sensor, wherein the control circuit provides an output signal on the output responsive to an amount of charge provided from the power supply that is at least equal to a predetermined threshold, the predetermined threshold selected from a profile of said thresholds that decrease in magnitude during application of power to said motor.

42. (Previously presented) The system of claim 41 wherein the control circuit includes an integrator coupled between the input and the output.

43. (Previously presented) The system of claim 41 wherein the control circuit includes a comparator coupled between the input and the output.

44. (Previously presented) The system of claim 43 wherein the comparator is a one-shot type.

45. (Previously presented) The system of claim 41 further comprising motor drivers that are coupleable to the motor and the output, wherein the motor drivers are controlled responsive to the output signal.

46. (Previously presented) The system of claim 45 wherein the motor drivers are disabled responsive to the amount of charge being at least equal to the predetermined threshold.

47. (Previously presented) A method comprising the steps of:
monitoring a charge amount being removed from a power supply; and
decoupling the power supply from a load responsive to the charge amount being at least equal to a predetermined level selected from a profile of said levels that decrease in magnitude during application of power to said load.

48. (Previously presented) The method of claim 47 wherein the load is an inductive type.

Claims 49-50 (cancelled).

51. (Previously presented) The method of claim 47 wherein the power supply is decoupled from the load for a predetermined time.

52. (Previously presented) The method of claim 47 wherein the amount of charge being removed from the power supply of the monitoring step is monitored by sensing an amount of current flowing through the load.

53. (Previously presented) The method of claim 52, wherein the monitoring step further comprises accumulating charge in relation to the sensed amount of current flowing through the load.

54. (Previously presented) The apparatus of claim 35, wherein the profile is applied during acceleration of the motor to an operational velocity.

55. (Previously presented) The system of claim 41, wherein the profile is applied during acceleration of the motor to an operational velocity.

56. (Previously presented) The method of claim 47, wherein the load of the decoupling step comprises a motor, and wherein the profile is applied during acceleration of the motor to an operational velocity.

IX. EVIDENCE APPENDIX

No additional evidence is included.

X. RELATED PROCEEDINGS APPENDIX

There exist no relevant related proceedings concerning this Appeal before the Board.